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SOLUTION BY THE PROPOSER.

It appears that x, y, v, w, and a are to be rational numbers and $a \neq 0$.
If $v^2 = y^4$, $w^2 = x^4$, and a solution is given by $v = \pm y^2$ $w = \pm x^2$.
If $v^2 \neq y^4$ we may proceed as follows: From the given equation, we have

$$x^4 - w^2 = a(v^2 - y^4); \tag{2}$$

whence,

$$\frac{x^4 - w^2}{v^2 - y^4} = a = \frac{(x^4 - w^2)(v^2 - y^4)}{(v^2 - y^4)^2}, \tag{3}$$

or

$$\left(\frac{x^2v \pm wy^2}{v^2 - y^4}\right)^2 - \left(\frac{x^2y^2 \pm wv}{v^2 - y^4}\right)^2 = a. \tag{4}$$

Letting

$$\frac{x^2v \pm wy^2}{v^2 - y^4} = b, \tag{5}$$

$$\frac{x^2y^2 \pm wv}{v^2 - y^4} = c \tag{6}$$

and solving (5) and (6) for x^2 and w,

$$x^2 = bv - cy^2 \tag{7}$$

and

$$w = cv - by^2. \tag{8}$$

From (7),

$$v = \frac{x^2 + cy^2}{b}, \tag{9}$$

Substituting the value of v from (9) in (8), we have

$$w = \frac{cx^2 + c^2y^2 - b^2y^2}{b}.$$

But from (4), (5), and (6), $b^2 - c^2 = a$. Hence if we put $b - c = m$, $b + c = a/m$; then

$$b = \frac{1}{2}\left(\frac{a}{m} + m\right), \qquad c = \frac{1}{2}\left(\frac{a}{m} - m\right).$$

Hence

$$x = r, \qquad y = s,$$

$$v = \frac{2r^2 + \left(\frac{a}{m} - m\right)s^2}{\frac{a}{m} + m} = \frac{2mr^2 + (a - m^2)s^2}{a + m^2},$$

$$w = \frac{\left(\frac{a}{m} - m\right)r^2 - 2as^2}{\frac{a}{m} + m} = \frac{(a - m^2)r^2 - 2ams^2}{a + m^2}.$$

2765 [1919, 171]. Proposed by A. M. HARDING, University of Arkansas.

ABC is an equilateral triangle. A point *D* is taken in *BC* such that *BD* is $\frac{1}{3}$ of *BC* and *E* is taken in *CA* such that *CE* is $\frac{1}{3}$ of *CA*. If the lines *AD* and *BE* intersect at *O*, show that *OC* is perpendicular to *AD*.

SOLUTION BY THE LATE L. G. WELD.

Since *CD* is twice *CE* and $\angle DCE = 60°$ the auxiliary line *DE* is perpendicular to *CE*; whence the point *E* is in the circumference of a circle described upon *CD* as a diameter. Since the triangles *BCE* and *BOD* are similar

$$BD \cdot BC = BO \cdot BE.$$

Hence, *O*, as well as *E*, lies in the circumference of the above circle and the angle *COD*, being inscribed in a semicircle, is a right angle.

Also solved by I. V. BACO, G. BREIT, H. H. DOWNING, WILLIAM HERBERG, I. HERMAN, J. A. McWILLIAMS, C. E. MANGE, H. L. OLSON, A. PELLETIER, H. R. PHALEN, J. B. REYNOLDS, W. F. RIGGE, W. G. SIMON, and the PROPOSER.

NOTES AND NEWS.

EDITED BY E. J. MOULTON, Northwestern University, Evanston, Ill.

The announcement in this MONTHLY (*1920*, 88) that Assistant Professor FLORENCE P. LEWIS had been promoted to an associate professorship in mathematics was somewhat belated, as this promotion took place in 1913.

At Cornell University Mr. D. S. MORSE of Union College, Professor W. L. G. WILLIAMS, of William and Mary College, Mr. H. PORITSKY and Mr. H. M. LUFKIN (*1920*, 43) have been appointed instructors in mathematics for next year. Professor JAMES McMAHON has been granted leave of absence for the year 1920–1921, Professor ARTHUR RANUM for the first term, and Professor F. R. SHARPE for the second term.

At Adelbert College of Western Reserve University, Dr. W. G. SIMON has been promoted to an assistant professorship, and Dr. C. A. NELSON of the University of Kansas has been appointed to an instructorship in mathematics.

Professor J. L. JONES, of Syracuse University, has been appointed head of the department of mathematics at Akron University.

At the College of the City of New York, Mr. J. A. BREWSTER has been promoted to an assistant professorship of mathematics, and Mr. W. A. WHYTE to an instructorship in mathematics.

Dr. MAELYNETTE ALDRICH, professor of mathematics, at Martha Washington College, a member of this Association, died from influenza on February 22.

Dr. O. A. RANDOLPH, associate professor of physics in the University of Colorado, a member of this Association, lost his life in a snow storm on April 11, during a mountain-climbing trip made for the purpose of photographing winter storm scenes.

Mr. J. W. LASLEY, Jr., assistant professor of mathematics at the University of North Carolina, has been on leave of absence and studying at the University of Chicago as fellow.

Dr. O. D. KELLOGG has been appointed associate professor of mathematics at Harvard University (correction of a previous statement, *1920*, 238).